

REMARKS/ARGUMENTS

Claims 1-7 and 9-17 are pending herein. Claims 1, 4, 9 and 11 have been amended as supported by paragraph [0068], and Fig. 4 of the published application, for example. Claims 8 and 18-20 have been cancelled without prejudice or disclaimer.

1. The rejections of claims 8 and 18-20 under 35 U.S.C. 101 in section 3 on page 2 of the Office Action is noted, but deemed moot in view of cancellation of those claims. Accordingly, reconsideration and withdrawal of the present rejection are respectfully requested.

2. Claims 1, 2, 7, 8, 11, 12, 15 and 18 were rejected under 35 U.S.C. 102(e) over Ghitza. To the extent that this rejection may be applied against the amended claims, it is respectfully traversed.

Independent claim 1 recites a method of training a quality assessment tool comprising the step of dividing a database comprising a plurality of samples, each with an associated mean opinion score, into a plurality of distortion sets of samples according to a dominant distortion present in each sample. The method further comprises the step of training a distortion specific assessment handler for each distortion set, such that a fit between a distortion specific quality measure generated from a distortion specific plurality of parameters for a sample and the mean opinion score associated with the sample is optimized.

Independent claim 11 recites an apparatus for training a quality assessment tool comprising means for dividing a database comprising a plurality of samples, each with an associated mean opinion score, into a plurality of distortion sets of samples according to a dominant distortion present in each sample. The apparatus further comprises means for training a distortion specific assessment handler for each distortion set, such that a fit between the distortion specific quality measure generated from a distortion specific plurality of parameters for a sample and the mean opinion score associated with the sample is optimized.

Applicants respectfully submit that an important aspect of the present invention is that the parameters associated with each sample are processed to identify the dominant distortion that is present in the particular sample (Published application paragraph [0068]). This allows the samples from the speech database 60 to be divided into a plurality of distortion sets 67, 67'... 67n (Fig. 4) in dependence upon the dominant distortion present in each sample (published application paragraph [0068]). The division of the samples according to the dominant distortion allows for creation of an optimum mapping between the parameters for each speech sample of the distortion set and the mean opinion score associated with each speech sample (published application paragraph [0069]).

Ghitza fails to disclose or suggest any form of dividing a database into a plurality of distortion sets of samples according to a dominant distortion present in each sample. Ghitza discloses, in the Abstract, that the method and device described therein is for estimating subjective audio quality from objective distortion measures. Ghitza further disclosed, in the Abstract, that the method includes training a model (i.e., a distortion-to-mean opinion score map) using several databases of speech samples in a Phase 1, and a method of estimating the audio signal quality of a new (unseen) signal based on the model created in Phase 1.

In particular, Ghitza discloses, in column 2, lines 53-60, that the first phase (Phase 1) of the system described therein is a training phase which obtains a distortion-to-mean opinion score map using N sets of operations 102-1, 102-2, ... 102-N, each based on a corresponding source speech database 110. Ghitza further discloses, in column 2, lines 61-65, that a given database 110 of source speech includes a subjective test operation 112, a modulated noise reference unit generation operation 114 and an objective distortion measurement operation 116. Ghitza discloses, in column 2, line 65 -- column 3, line 2 that these operations are repeated for each of the N sets of 102-1, 102-2, ... 102-N and the results of the subjective test and objective distortion measurement operations 112 and 116 are applied as inputs to a regression analysis operation 118. Ghitza discloses, in column 3, lines 2-8, that the

output of the regression analysis operation 118 is a distortion-to-mean opinion score mapping function.

The Examiner is respectfully requested to note that while Ghitza discloses the presence of several source speech databases 110, there is no disclosure or suggestion within Ghitza that the speech provided in the databases 110 are to be partitioned according to distortion criteria. Further, Ghitza fails to disclose or suggest that each of the several source databases 10 are to be used to create more than one assessment handler (or model). It should be noted that the method described in Ghitza does not disclose the present invention as claimed, because it does not disclose the fundamental steps of dividing the database of speech samples into a plurality of distortion sets based upon a distortion criteria (which is the **dominant** distortion type present in each speech sample) and then training a **distortion specific** assessment handler (or model) for each distortion set. Ghitza only produces a single model 118 and, therefore, the method described is fundamentally different from the present invention, as claimed.

For at least the foregoing reasons, Ghitza fails to disclose or suggest the step of dividing a database comprising a plurality of samples, each with an associated mean opinion score, into a plurality of distortion sets of samples according to dominant distortion present in each sample and training a distortion specific assessment handler for each distortion set, as recited in claim 1. Similarly, Ghitza fails to disclose or suggest an apparatus comprising means for dividing the database comprising a plurality of samples, each with an associated mean opinion score, into a plurality of distortion sets of samples according to dominant distortion criteria present in each sample, and means for training a distortion specific assessment handler for each distortion set, as recited in claim 11. Since claims 2, 7 and 15 depend either directly or indirectly from claim 1, and claim 12 depends directly from claim 11, those claims are also believed to be allowable over the applied prior art. Accordingly, reconsideration and withdrawal of the present rejection are respectfully requested.

3. Claims 3-6, 9, 10, 13, 14, 16, 17, 19 and 20 were rejected under §103(a) over Ghitza in view of Bayya. To the extent that this rejection may be applied against the amended claims, it is respectfully traversed.

Claim 4 recites a method of assessing speech quality in a telecommunications network. The method comprises the steps of determining a dominant distortion type for a sample and using a distortion specific assessment handler to combine a plurality of parameters specific to the dominant distortion type to provide a distortion specific quality measure for each sample. The method further comprises generating a quality measure in dependence upon the distortion specific quality measure.

Claim 9 recites an apparatus for assessing speech quality in a telecommunications network. The apparatus comprises means for determining a dominant distortion type for a sample and a distortion specific assessment handler for combining a distortion specific plurality of parameters to provide a distortion specific quality measure for each sample. The apparatus further comprises means for generating a quality measure in dependence upon the distortion specific quality measure.

Similar to above, the Examiner is respectfully requested to note that an important aspect of the present invention is to have several models, each trained on data having a different distortion type such that evaluation of new (unseen) signals is done by determining a dominant distortion type present in a sample and combining a plurality of parameters specific to that distortion through the use of a distortion specific model to provide a distortion specific quality measure.

As discussed in greater detail above, Ghitza fails to disclose or suggest any type of distortion specific assessment handler to combine a plurality of parameters specific to dominant distortion type to provide a distortion specific quality measure for each sample. In particular, in the evaluation phase of Ghitza, background noise can be applied to the source signal 112, then the signal is coated 124, objective parameters are generated 126, and the mapping 128 generated in phase 1 is applied to generate the

score on a mean opinion score scale. Therefore, Ghitza fails to disclose or suggest the features recited in claims 4, 9 and 11.

Bayya is used by the Examiner only for its alleged disclosure of a speech evaluating system in a communication system. Accordingly, the disclosure in Bayya relied on in the Office Action fails to overcome the deficiencies of Ghitza.

For at least the foregoing reasons, the method recited in claim 4 and the apparatus of claim 9 would not have been obvious to one skilled in the art provided with the disclosures of Ghitza and Bayya. Specifically, Ghitza and Bayya fail to disclose or suggest the step of using a distortion specific assessment handler to combine a plurality of parameters specific to dominant distortion type to provide a distortion specific quality measure for each sample and generating a quality measure in dependence upon the distortion specific quality measure, as recited in claim 4. Similarly, Ghitza and Bayya fail to disclose or suggest an apparatus comprising a distortion specific assessment handler for combining a distortion specific plurality of parameters to provide a distortion specific quality measure for each sample, and means for generating a quality measure in dependence upon the distortion specific quality measure, as recited in claim 9. Since claims 5, 6, 14 and 17 depend either directly or indirectly from claim 4, and claim 10 depends directly from claim 9, those claims are also believed to be allowable over the applied prior art.

With regard to claims 3, 13 and 16, Applicants respectfully submit that Bayya is relied on in the Office Action only for its alleged disclosure of a speech evaluating system in a communication system. Thus, the disclosure in Bayya relied on in the Office Action fails to overcome the deficiencies of Ghitza as attempted to be applied to claim 1, from which claims 3, 13 and 16 depend. Accordingly, reconsideration and withdrawal of the present rejection are respectfully requested. Accordingly, reconsideration and withdrawal of the present rejection are respectfully requested.

If the Examiner believes that contact with Applicants' attorney would be advantageous toward the disposition of this case, the Examiner is herein requested to call Applicants' attorney at the phone number noted below.

The Commissioner is hereby authorized to charge any additional fees associated with this communication or credit any overpayment to Deposit Account No. 50-1446.

Respectfully submitted,

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Date



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